Clean Copy of Substitute Specification, New and New Claims

In The Specification:

Page 2, fifth full paragraph:

B2 The present invention provides a method and an apparatus for the measuring of structures in a fingerprint or the like, for example using one of the techniques described above, characterized as stated in the disclosed claims.

Page 4, first full paragraph:

B3 The shown embodiment having equally distanced sensors is preferred, but other solutions, e.g. comprising groups of sensors for measuring certain parts of the finger print, are also possible.

Page 4, fourth full paragraph:

B4 Although the lines shown in the drawings comprise equally spaced sensors the shifted, second, third etc. lines may comprise single or groups of sensors, increasing the resolution in certain parts of the finger print, and/or measuring differences in velocity of different parts of the finger print, in case the movements are uneven. Also, the second, third etc. lines may have an angle in relation to the first line of sensors.

Page 5 to page 6, fourth paragraph:

B5 Figure 3 shows a simplified view of the apparatus according to the invention comprising conductors from the sensors 1 to an amplifier and multiplexer 8. The signal is then digitized in an A/D-converter 9 before the digital signal is sent to a computer 10 comprising any available computer program being able to analyse the signal.

Page 6, first, second, and third full paragraphs:

B6 A cross section of a more realistic embodiment is shown in figure 4, in which one end of each of the closely spaced conductors 11 represents the sensors, and the other end of these conductors is connected to a microchip 15. The conductors 11 may be a part of a multi layer printed circuit board moulded in epoxy, producing two or more lines of sensors. Each sensor 1 would be about

35x50 μm. If the sensors in each line are mounted with distance between the centres of 150 μm, the resolution with three shifted lines will be 50 μm.

Figure 5 shows an embodiment of the invention where an external time varying, e.g. oscillating or pulsating, voltage 12 is applied to the finger through the conducting area 14 on the side of the sensor area. Planes at a constant voltage 13 are placed close to and parallel to the lines of sensors 1. This reduces cross-talk and noise from external sources, and improves contrast in the image generated from the measurements. This may be implemented by using a multilayer printed circuit board, where one or more of the conducting layers are at a constant voltage. An insulating layer (not shown) preferably covers the conductors 1,11 and shielding planes 13. The conducting area 14 may also be covered by an insulating layer, but this would decrease the signal strength. For better performance the oscillating voltage 12 may be applied to both sides of the sensor surface. The oscillating voltage may, as mentioned above, be a pulse train, or a sinus.

In the one embodiment, a sinus of 100kHz is applied to the conducting area 14, and each of the conductors 11 is terminated by a resistance, and the signal is amplified and fed to a demodulator, multiplexer and analogue-to-digital converter. One advantage of this embodiment is that there is essentially no signal on the conductors 11 in the sensor area when no finger is present, thus reducing problems with offset voltages varying with time and drift in the electronics.

New Claims 15-28:

15. (New) A method for sensing a fingerprint comprising:

generating a plurality of images of different portions of a fingerprint surface by measuring structural features of the fingerprint surface at given intervals of time with an essentially one-dimensional sensor array as the fingerprint surface is moved relative to the sensor array in a direction that is generally perpendicular to the sensor array;

determining which of the plurality of images overlap or partially overlap others of the plurality of images;

disregarding those images which overlap or partially overlap one or more other images; and

constructing a two-dimensional image of the fingerprint surface from only non-overlapping images obtained from said generating step.